KING COUNTY CONVEYANCE SYSTEM IMPROVEMENT PROJECT

TASK 120 – DRAFT CRITERIA FOR PRIORITIZATION OF SUBREGIONAL PLANNING AREAS AND PROJECTS

MAY 1999

INTRODUCTION

King County Department of Natural Resources, Wastewater Treatment Division (WTD) is conducting the Conveyance System Improvement (CSI) Project, that involves planning, project specification and constraint identification efforts for an array of conveyance and pump station improvements. The process for planning these improvements is divided into three phases:

- Phase 1 – Overall Planning,
- Phase 2 – Subregional Planning Area Specific Planning, and
- Phase 3 – Specific Project Planning and Final Report

Included within Phase 1 is a task (Task 120) to develop draft criteria for the selection of specific subregional planning areas, also referred to as service basins, and projects for study. This report summarizes the process used to develop criteria, the resulting criteria, and the priority-setting process. The purpose of the prioritization process was to effectively focus King County's resources to address critical capacity issues and conveyance system problems.

A "Core Team" of senior King County WTD and consultant staff was established to work together to coordinate and facilitate the CSI project. This Core Team met several times to establish draft prioritization criteria and develop a process to use these criteria to select priority-planning areas.

DEFINING THE PRIORITIZATION PROCESS

The consultant/WTD project Core Team identified the following priority setting process steps to be accomplished in this task:

- Define objectives and expected outcomes
- Define the subregional planning areas, or service basins, that need to be prioritized
- Define and compile information to be used in process, including a list and description of system problems
- Define prioritization criteria
- Describe the prioritization methodology
- Set priorities and document results

Obtaining WTD staff input and consensus regarding the process and results was also determined to be an important element of the prioritization process. Therefore, a workshop approach was used to obtain input from WTD staff on criteria definitions and relative importance.

Objectives and Outcomes

Process objectives and expectations were determined to be the following:

- Obtain a staff input regarding criteria to be used to set priorities
- Determine which criteria are the most important
- Develop of a list of criteria
- Evaluate the relative importance and weighing criteria
- Hold at least one staff workshop to apply and gain consensus on criteria
- Begin to determine where limited County Capital Improvement Program (CIP) resources should be applied

"Early Out" Planning Areas and Projects

"Early Out" planning areas and projects were established by King County staff early in the CSI process. These Early Out planning areas and projects were selected by County staff based upon an overwhelming and clearly identified need to complete planning level studies as soon as possible. Immediately identified Early Out CSI planning areas and projects are the following:

- Hidden Lake Basin (Part of the North Puget Sound Planning Area)
- Mill Creek Basin (includes Green River Central and South Planning Areas)
- Juanita and Kirkland Pump Stations

Planning Areas and Projects to Be Prioritized

Planning areas within the King County service area were grouped into common subregional planning areas. The Core Team reviewed available information and maps, and determined that the following items would be prioritized:

- "Early Out" planning areas and projects (already selected as first priority)
- Other selected subregional planning areas not already included as Early Out projects.

- Other specific projects within each planning area could then also be prioritized

Information regarding problems and service related issues within each subregional planning area would be compiled and used to apply the prioritization criteria. A map of the King County subregional planning areas is shown on Figure 1. Table 1 lists the King County CSI planning areas to be prioritized in order from north to south as shown on Figure 1. Those CSI planning areas designated "Include" in the table were included in the prioritization process. Designated higher priority "Early Out" CSI planning areas are also listed in the table.

Table 1. CSI Subregional Planning Areas

Planning Area Designation	Prioritization Status
North Lake Washington	Include
North Puget Sound	"Early Out" – In progress
NW Lake Washington	Include
NE Lake Washington	Include
North Lake Sammamish	Include
South Lake Sammamish	Include
SE Lake Washington	Include
South Lake Washington	Include
Green River "North"	Include
Green River "Central"	"Early out" – In progress
Green River "South"	"Early out" – In progress

It was determined that the Central and South Seattle combined sewer planning areas would not be included in the planning area prioritization process because they are already being addressed by the County under the Combined Sewer Overflow (CSO) reduction program.

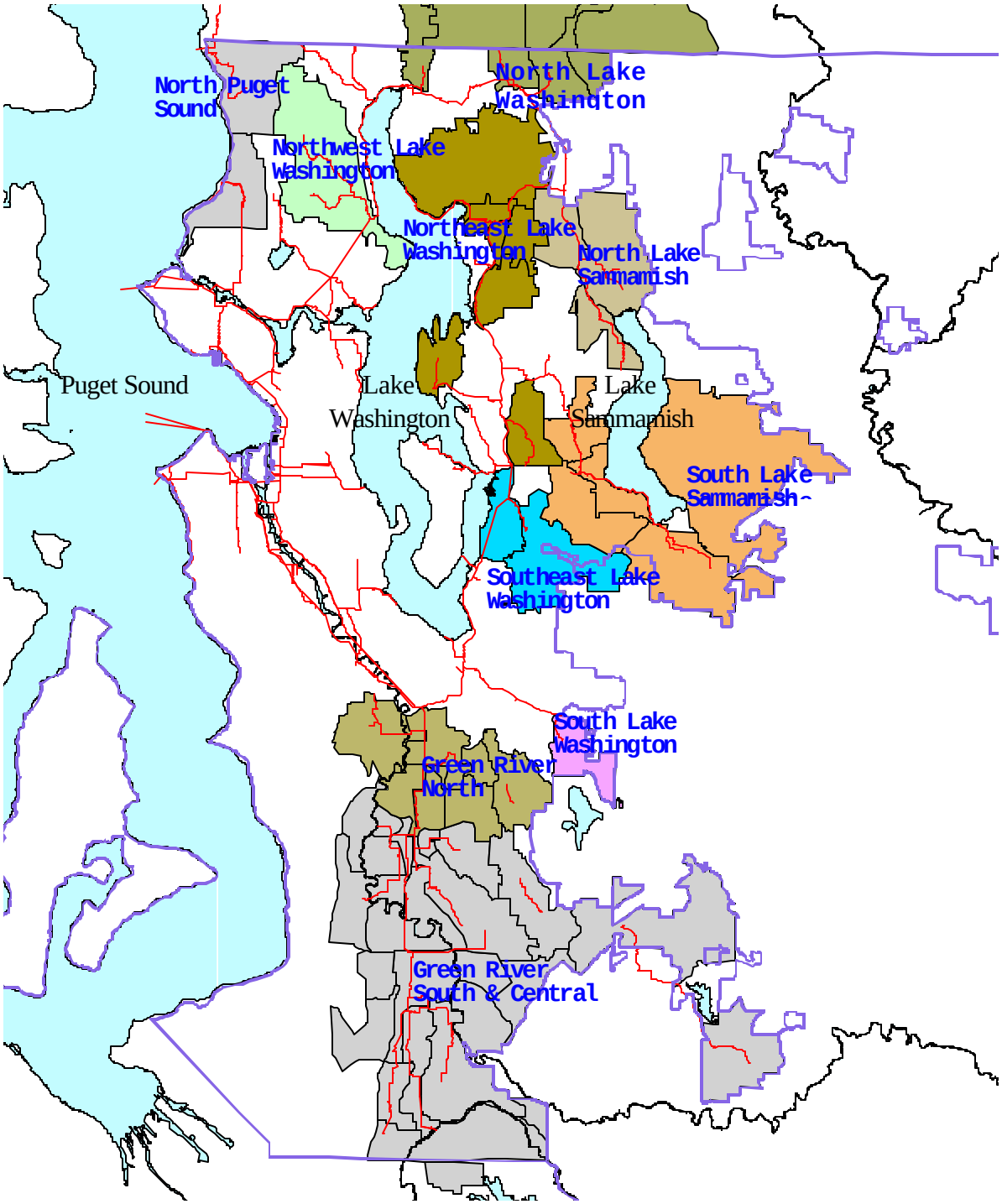

Figure 1

CSI Subregional Planning Areas

DRAFT PRIORITIZATION CRITERIA DEVELOPMENT

The CSI Core Team then developed draft subregional planning area and project-specific prioritization criteria, to be presented for review and comment by the WTD staff at a workshop. The selected draft criteria developed by the Core Team for the workshop are listed below.

Draft Subregional Planning Area Criteria

The following draft subregional planning area criteria were developed by the Core Team:

- **Flow/Overflow** – Projected growth/overflows within planning area from 2000-2020 (greater increase = higher priority). Frequencies of storm-related overflows exceeding once in 20 year standard in last ten (?) years (higher number = higher priority).
- **Consequences (current conditions)** – Number of issues/known problems within planning area (e.g. private property damage, environmental impacts, community complaints, etc.), (more issues/problems = higher priority).
- **Growth** – Number of Regional Wastewater Service Plan (RWSP) common conveyance projects located within a planning area (more projects = higher priority). Percent residential population change from 2000-2020 for service basins within the planning area (greater change = higher priority).
- **Operations and Maintenance Improvements** – Number of operational issues per planning area (higher number = higher priority).Number of maintenance projects/problems in planning area (higher number = higher priority).
- **Cost**

Draft Project Prioritization Criteria

The Core Team also developed draft project prioritization criteria for presentation to WTD staff at the workshop. The intent of these criteria was to prioritize projects within each of the selected subregional planning areas. The following draft project prioritization criteria were developed by the Core Team:

- **Overflows** – Base flow versus design capacity (greater ratio = higher priority). Expected peak flow to base flow capacity ratio (larger number = higher frequency and higher priority). Projected growth overflows (larger number = higher priority).
- **Consequences (current conditions)** – Number of existing issues/problems addressed by project (e.g., threats to public health and safety; private property damage; environmental impacts; community impacts (traffic, noise, odor); others).

- **Implementation Requirements** – Number/type of permits required (fewer permits = higher priority). Number/type of right-of-ways (ROW)/ easements required (fewer = higher priority).

- **Local Coordination Opportunities –** Number of opportunities for local project coordination (e.g., public works, roads, etc.) (more opportunities = higher priority).

- **Cost**

- **Operations and Maintenance Improvements –** Number of potential benefits to operations (e.g., improves reliability); complements planned activities (new equipment); complements engineering work record (more benefits = higher priority). Number of potential benefits to maintenance (e.g., easier maintenance; complements planned activities such as scheduled replacements) (more benefits = higher priority).

CRITERIA DEVELOPMENT WORKSHOP

At this point in the project, the CSI Core Team was prepared to hold the workshop with King County staff to present planning information and receive comments on draft planning area and project prioritization criteria. The WTD staff criteria presentation and review workshop was held on December 2, 1998 at the East Section Wastewater Reclamation Plant in Renton. The workshop was attended by 17 King County staff from both the CIP and WTD and seven members of the CSI consultant Core Team.

A series of handouts and worksheets were developed to help guide the workshop participants through a discussion of the proposed prioritization criteria. The workshop agenda included a summary of work completed, a review of workshop objectives, discussion of draft planning areas and problems, a review of criteria, and participant feedback and suggestions. Copies of the workshop agenda and handouts are included in the appendix for reference.

After a presentation of proposed draft criteria and subregional planning areas, the workshop participants provided the following suggestions:

- Include areas in the north end of King County and in Snohomish County that may have facilities that may be taken over by King County in the near future. Examples included the North Creek and Swamp Creek areas. This area was included as the North Lake Washington planning area.

- Define how the siting of a treatment plant in the north end of the King County service area would factor into planning efforts. It was decided that the initial CSI focus would be on projects that were common to all RWSP alternatives.

After some additional discussion, it was decided that a small group of King County and consultant staff would meet to discuss problems and issues within each of the planning areas.

Planning Area Criteria

The draft subregional planning area prioritization criteria were then introduced to the group for review and comment. The workshop participants were asked to propose additional criteria and think of how any of the criteria could be defined and measured. The following suggestions were made by the participants:

- Priority criteria should consider the timing overflows and the associated need for seasonal flow capacity. For example, summer overflows may be more of a priority because of their visibility and potential impacts.
- Include "sewer backup" in both planning area and project overflow criteria (i.e. Kenmore, Coal Creek).
  - Consider negative impacts on local systems
  - Consider type of overflow
- Include with consequences criteria:
  - public health as highest priority
  - impacts on private property also high priority
  - consideration of environmental (water quality, fish and habitat, water use) impacts (CSO occurrence reports may provide information on this topic)
  - stakeholder reaction should be considered.
- Consider the relative importance of public health protection and compliance with regulatory requirements such as the Endangered Species Act when reviewing projects and planning areas. The workshop participants did not reach consensus on the relative importance of these topics.
- Consider capacity needs between that required by projected 20-year storm (the current design standard), and the actual 1996 storm (larger than a 20-year storm). Look for opportunities to establish "middle ground" design requirements.
- The completion schedule for both planning areas and projects should reflect consideration of project implementation requirements such as complexity, permitting requirements, and political issues.
- Include with the growth criterion:

  - year that capacity is exceeded
  - amount that capacity will be exceeded
  - future consequences when two projects are related
  - flow projections, that are more relevant than percent of population growth.
- Include with operations and maintenance criterion:
  - cost to replace or maintain equipment with or without new facilities
  - timing of other upgrades
- Look at the Maintenance Management Information (MMI) system for information (life expectancy of equipment, etc.) which would be useful in applying the operations and maintenance criteria.
- Consider potential or planned facility acquisitions and/or assessments, whether they would serve the regional system, and whether there is an available customer base.
- Look at potential "marriages" of King County and local government efforts to more cost-effectively and efficiently address growth including local comprehensive sewer plan opportunities.
- Do not include cost as a planning area prioritization criterion.

When asked to select the most important subregional planning area criterion, the voting participants voted nearly equally for two of the proposed criteria: consequences (ten votes) and flow/overflow (nine votes). None of the other criteria received a "most important" vote.

Project Criteria

Workshop participants made the following suggestions regarding the proposed project prioritization criteria:

- Include with flow/overflow criterion:
  - whether it is a current or forecasted problem (current overflow would be a higher priority)
  - frequency of overflows (for example, the Factoria facility is at capacity but does not currently have overflows)
- Include with consequences criterion:

  - same issues raised during planning area discussion
  - projects that have both public health and environmental impacts should have a higher priority
  - stakeholder reaction should be considered.

- Include with implementation requirements criterion:
  - consider downstream impacts when reviewing and comparing projects (i.e., Mill Creek Relief)
  - SEPA requirements
  - permitting requirements – projects with more and/or difficult permit requirements might receive higher priority because of the longer time required to put the project in service).

- Include with local coordination criterion:
  - Infiltration/Inflow (I/I) considerations/requirements (planning) for long-term projects and defining alternatives (i.e., Interurban pump station did not consider I/I assumptions and is now at capacity).
  - demand
  - opportunities

- Include with operation and maintenance criteria consideration of construction schedule, constraints, and constructability.

Sixteen of 19 voting workshop participants felt that consequences should receive the highest priority. Two felt that flow/overflow was the most important criterion, and one felt that operations and maintenance should receive the highest priority.

Other Workshop Discussions

There was some discussion during the workshop of 1996 storm capacity versus 20-year design storm capacity. The flows used in this analysis are based upon the 20-year design storm as determined by the WTD hydraulic modeling group. The 1996 storm flow exceeded the 20-year design storm. There was no workshop consensus on using anything other than the current 20-year design storm.

COLLECTION OF CRITERIA INFORMATION

Based upon the draft prioritization criteria, and in response to King County staff comments at the workshop, the CSI team began the collection of available data that would be necessary to prioritize subregional planning areas. This data collection effort included the following items:

- Members of the CSI Core Team met with once each with operations and maintenance representatives from the East and West Sections to list and discuss system operational issues and problems.
- WTD provided conveyance capacity information, including the length, diameter, and date the pipe capacity is exceeded (20-year storm criteria);
- Pump station capacity versus flow and year of any required pump station upgrades;
- Rate and magnitude of population growth for each subregional planning area;
- Documented system overflows and customer claims classified by subregional planning area; and
- Relevant planned capital improvement projects classified by subregional planning area.

FINAL PLANNING AREA PRIORITIZATION CRITERIA

The final subregional planning area prioritization criteria were established based upon the draft criteria, comments from workshop participants, and the practical availability of quantifiable and comparable information. The last item – the practical availability of information - was key to this process. For example, workshop participants suggested using not only overflows but also the time of year as a criteria. However, from a practical standpoint, evaluation of the number of overflows along with other criteria was judged by the Core Team to be adequate for planning area prioritization.

Workshop participants gave the highest priority to "consequences" and to flow/overflows for planning area criteria. Consequences in the workshop context were defined to include property damage, environmental impacts, community complaints, and threats to public health and safety that could result from a variety of system problems. There was discussion during the workshop that many of these "consequences" were really the negative impacts that could occur as a result of conveyance system shortcomings. However, workshop participants did not reach consensus on a preferred way to treat the term "consequences" as a prioritization criterion.

After consideration of the workshop results, the Core Team determined that many of the items contained within the workshop participant's definition of "consequences" were terms describing the potential negative results of system problems. However, one item, "community complaints"

was a planning area characteristic that could potentially be measured and compared. Therefore, the Core Team decided to use customer complaints to define the consequences criterion, but to define it as number of customer complaints. Some of these consequences were also related to the workshop "overflow" criterion, which was voted as the second highest priority by the workshop participants.

The Core Team then divided measurable criteria into four classifications of related criteria for planning area prioritization. Table 2 lists the four classifications, criteria, and measure for each criterion.

Table 2. Final Subregional Planning Area Prioritization Criteria and Measures

Flow Capacity	**Measure**
Projected flows exceeding primary basin interceptor and trunk capacity	Years at capacity and lengths of pipes to be paralleled or replaced (total lengths of pipes divided by number of years remaining)
Pump stations with significant capacity problems	Year at capacity and size of pump station (millions of gallons per day (mgd)/years remaining)
Frequency of known overflows	Number of overflows
Customer claims	Number of customer claims
Operations and Maintenance	**Measure**
Operations and maintenance related projects in the planning area	Number of operations and maintenance projects and identified problems
Local Coordination	**Measure**
Number of currently planned King County projects within the planning area	Number of known significant County projects that could be impacted by planning decisions
Local coordination issues – including potential facilities acquisition	Number of known local coordination issues that could impact King County projects
Growth	**Measure**
Growth in new customers expected within the basin in the next 20 years	Number of new customers (related to new development)

PROJECT PRIORITIZATION CRITERIA

Although project prioritization criteria were discussed in the workshop as a part of this task, this task memorandum focuses on the establishment of planning area criteria. Several "early out" projects had already been identified and other individual projects will be selected after the planning areas are prioritized as part of Task 140 – Priority Setting.

APPENDIX ITEMS

The appendix contains the following items related to the development of planning area and project prioritization criteria:

1. Criteria Workshop (Workshop No. 1) Agenda
2. Draft Planning Area and Project Prioritization Criteria
3. Planning Area and Project Prioritization Criteria Worksheets
4. Example of Applying Planning Area Criteria
5. Workshop No. 1 (December 2, 1998) Notes

APPENDIX

1. Criteria Workshop (Workshop No. 1) Agenda
2. Draft Planning Area and Project Prioritization Criteria
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4. Example of Applying Planning Area Criteria
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